An Artificial Neuronal Network Approach to Diagnosis of Attention Deficit Hyperactivity Disorder

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***Abstract*—On the one hand about 3% to 12% of school-aged children present Attention Deficit Hyperactivity Disorder (ADHD), a situation that is characterized by attention deficit, impulsiveness and restlessness, coming from a change in the neurotransmitters of the central nervous system, caused by psychological messes, environment effects or genetic characteristics. One the other hand, when one´s aim is the prediction of ADHD in children and teenagers, we need to be able to handle incomplete or default data, like the one in ActiGraph´s images that may exhibit potential disordered sleep patterns. Indeed, using a new approach to knowledge representation and reasoning based on Logic Programming, complemented with a computational framework based on Artificial Neural Networks, ActiGraph's pioneering actigraphy monitoring systems may deliver, on the fly, real world information about sleep/wake behavior, circadian rhythms, daytime physical activity, and environmental light intensity for the study and clinical assessment of sleep disorders and the relationship between sleep and chronic disease.**

Keywords—ActiGraph´s Images; Attention Deficit Hyperactivity Disorder; Logic Programming; Knowledge Representation and Reasoning; Artificial Neuronal Networks.